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D E C I S I O N
of 10 January 2005

Case Number: T 0053/01 - 3.5.3

Application Number: 96937949.4

Publication Number: 0861545

IPC: H04L 12/26

Language of the proceedings: EN

Title of invention:
Method of determining the topology of a network of objects

Applicant:
Loran Network Systems, L.L.C.

Opponent:
-

Headword:
Network topology determination/LORAN

Relevant legal provisions:
EPC Art. 84, 52, 54, 56

Keyword:
"Inventive step - yes"

Decisions cited:
-

Catchword:
-

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Case Number: T 0053/01 - 3.5.3

D E C I S I O N
of the Technical Board of Appeal 3.5.3
of 10 January 2005

Appellant: Loran Network Systems, L.L.C.
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Representative: Rapp, Bertram, Dr.
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 24 August 2000 refusing European application No. 96937949.4 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: A. S. Clelland
Members: D. H. Rees
M.-B. Tardo-Dino

Summary of Facts and Submissions

I. This is an appeal from the decision of the examining division to refuse the European patent application number 96 937 949.4, originally filed as International application PCT/CA96/00752, with publication numbers 0 861 545 and WO 97/18658 respectively. The decision was dispatched on 24 August 2000. The reason given for refusing the application was that the claimed subject-matter lacked an inventive step in the light of document

D1: US 5450408 A.

II. Notice of appeal was filed and the fee paid on 26 October 2000. Amended independent claims 1 and 16 were submitted with a statement setting out the grounds for the appeal on 22 December 2000.

III. In a preliminary communication the board gave its view that there was a significant difference between the invention as described and the disclosure of D1. However there was a lack of clarity in both the claims and the description and consequent possible objections under Articles 52(2) and 83 EPC. Further amendments to both description and claims were submitted in response.

The board issued an invitation to oral proceedings accompanied by a communication which pointed out several outstanding objections, and which indicated that the oral proceedings could perhaps be cancelled if all these objections could be overcome. After further submissions and telephone consultations, the board decided to cancel the oral proceedings.

IV. The appellant requests that the decision of the examining division be cancelled in its entirety and a patent granted on the basis of the following text:

Claims: 1 to 19 submitted on 10 November 2004;

Description: pages 1 to 35 submitted on 29 October 2004;

Drawings: sheets 1 and 2 as originally filed.

V. The single independent claim 1 reads as follows:
"A method of determining the existence of a communication point-to-point link between a pair of devices comprising:
(a) collecting traffic counters from devices in the network by reading such counters from the devices themselves and so measuring traffic output from one device of the pair of devices;
(b) collecting traffic counters from devices in the network by reading such counters from the devices themselves and so measuring traffic received by the other device of the pair of devices;
(c) calculating a measure of the similarity between the traffic output of one device of said pair of said devices and the traffic received into the other device of said pair of said devices and declaring the existence of the communication point-to-point link in the event that said measure of similarity is in excess of a predetermined threshold."

Reasons for the Decision

1. *Admissibility of the amendments*

1.1 The description

1.1.1 At page 2, line 22 to page 3, line 9 a summary of the disclosure of the prior art document D1, together with a remark on a particular drawback of the system disclosed therein, has been introduced. This summary and the accompanying remark do not go beyond what the skilled person would have understood from D1 and therefore, in accordance with the long-standing case law of the Boards of Appeal, its introduction is not to be considered to extend the contents of the application.

1.1.2 Page 5, lines 9 to 11: The wording of the original application at page 4, lines 20 to 22, has been corrected to make clear that a "subnetwork" is not a "device", in accordance with the normal understanding of the person skilled in the art.

1.1.3 Page 5, line 36 to page 6, line 1: In the original application the terms "link" and "path" were used largely indiscriminately. The board pointed out in its first communication that while the skilled person would conclude from the main embodiment of the invention as described that a point-to-point, i.e. direct, link was intended rather than a path possibly including intermediate nodes, there was a lack of clarity in this use. The description has been amended to define explicitly the term "path" in the application to be restricted to point-to-point links. Since the board concludes that the skilled person would have understood

from the application as filed that the term "path" should be interpreted as "point-to-point link", the addition of this explicit definition does not add subject-matter to the application and is therefore admissible.

1.1.4 At page 8, lines 5 to 25, the term "traffic" has been defined in terms which now correspond to the skilled person's understanding of that term, and confined to the context of a communication network. Examples of "traffic" and "activity" in the original application which were not compatible with the new definition have been deleted.

1.1.5 Page 13, lines 22 to 29: The definition of "device" has been amended to correct an obvious error in the application as filed whereby a device was a communications port rather than possessed such a port, and moreover to limit the definition to the only kind of device for which an implementation of the invention is described, namely where each device has a traffic counter. As this has the effect, at most, of restricting the scope of the invention to that subject-matter disclosed sufficiently clearly and completely for the invention to be carried out (Article 83 EPC), the board considers that these amendments do not extend the contents of the application beyond that which was filed.

1.1.6 At page 23, line 7, a redundant and confusing sentence (original application page 22, lines 13 to 16) has been deleted. The skilled person would have recognised that this sentence did not make any contribution to the disclosure of the application.

1.1.7 At page 31, line 29, a similarly redundant and confusing phrase (original application page 30, lines 23 and 24) has been deleted.

1.1.8 At page 35, line 2, a section of the original application (page 33, line 33, to page 35, line 20) containing a series of speculative alternative applications for similar techniques to that disclosed in the main embodiment has been deleted.

1.2 The claims

1.2.1 Claim 1, the single independent claim, is based on original claim 16. In addition to the original features, it qualifies "link" by "point-to-point". This merely emphasises the normal usage of the term "link" in the technical field, as for example in the ISO OSI network model, where layer 2 is the "data link layer".

1.2.2 The original "measuring the volume of traffic output" has been replaced by "measuring traffic output", and similarly for the input feature. This is disclosed and supported in the description by original page 3, lines 19 to 21 ("Preferably the traffic parameter measured is its volume, although the invention is not restricted thereto,") and page 7, lines 16 to 19, which give two examples, numbers of frames and numbers of packets.

1.2.3 The feature of "collecting traffic counters ... by reading such counters from the devices themselves" has been added. This feature is disclosed in the original description at page 4, line 32, to page 5, line 3.

1.2.4 The feature "declaring the existence of the communication link in the event the volumes are approximately or identically the same" of original claim 16, has been replaced by "calculating a measure of the similarity between the traffic output ... and the traffic received ... and declaring the existence of the communication point-to-point link in the event that said measure of similarity is in excess of a predetermined threshold." This is disclosed in the original description at page 11, lines 30 to 34, page 17, line 1 to page 18, line 18, and page 29, line 7 to page 30, line 21.

1.2.5 All features of the dependent claims are clearly disclosed in the original description and claims, with the exception of present claim 16, which has not been updated to take account of the fact that step (a) of claim 1 has been redefined.

2. *Clarity*

2.1 As a result of the amendments submitted, the description no longer contains references to speculative potential embodiments of the invention and, with two minor exceptions, is compatible with the claimed subject-matter. The exceptions are page 4, lines 3 to 19, which corresponds to a previous formulation of claim 1, and page 34, lines 29 to 34, which uses blood circulation as an example of a network.

The board notes however that there are a number of errors in the current description apparently resulting from the replacement of pages without taking account of

the fact that content has moved from one page to another. This appears to affect pages 9, 11, 12, 25, 27, 28 (which is missing) and 31.

2.2 Moreover, the claimed subject-matter is itself now clear, with the exception noted below. In particular it is clear that the invention relates to communication networks and that the method serves to detect links between devices rather than paths which might include intermediate nodes.

2.3 Dependent claim 16 is not clear; as noted above it has not been changed to take account of amendments to claim 1.

2.4 The board concludes that, with the exceptions noted, the application satisfies the requirements of Article 84 EPC. The further objections which the board raised in its communication of 17 November 2003 as a consequence of the lack of clarity of the application at that time have therefore also been overcome.

3. *Novelty and inventive step*

3.1 The examining division selected D1 as the document showing the prior art closest to the invention. D1 and the application are concerned with the same problem, namely how to determine the topology of a communications network. Both documents, furthermore, achieve this aim by measuring parameters of the traffic on the network. However, they are based on entirely different assumptions as to the parameters available to be measured. D1 assumes that each packet of data on the network contains unique identifiers (addresses) of the

device which transmitted the packet originally and its destination, and that packets on the network can be monitored and analysed to read this information. The present application does not make this assumption; on the other hand it presupposes that each device on the network has a traffic counter, and can report the amount of traffic input and output to a network monitor. Since the present independent claim specifies the traffic counters, and no such counters can be deduced from D1, the board concludes that the claimed subject-matter is novel with respect to the disclosure of D1. Moreover, since D1 relies on analysing packets for the contained addresses, it provides no hint of a method such as presently claimed, which does not require this capability.

3.2 None of the prior art cited in the search report discusses traffic counters as specified in the current independent claim. The only indication that such traffic counters were prior art is contained in the patent application itself (page 5, lines 28 and 29 of the present text, "A network of devices such as the above is not novel.") Even starting from this statement of prior art, however, the board judges that it would require an inventive step, in the absence of any hints in this direction in the prior art, to consider using correlations between traffic measurements at different devices to deduce the network topology.

3.3 Accordingly the board concludes that the claimed subject-matter is new and involves an inventive step.

4. The board therefore concludes that the decision under appeal is to be set aside. In the light of the various objections still outstanding however (Reasons 2.1 and 2.3), the board considers that the case should be remitted to the examining division for further prosecution.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the examining division for further prosecution.

The Registrar: The Chairman:

D. Magliano A. S. Clelland